More preferably, it shall be thermally treated at 150-300°C, which is a temperature range that can secure suitably the crystallinity of the ceramic phase, although it is a considerably low temperature range for a thermal treatment.

If the mixture is thermally treated to vaporize the solvent or the dispersant, the added citric acid acts as a reductive combustion aid and is removed, giving rise to a nonexplosive oxidative-reductive combustion reaction with the anion of a constituent ceramic element, when the ceramic oxide is formed without scattering out by virtue of reaction heat generated at this time.

And in the reaction, components other than the constituent ceramic element are removed ~~during~~ after a sufficient time of combustion reaction so that the ultrafine ceramic oxide powder of pure type, without impurity is obtained.

The particle size of the ultrafine ceramic oxide powder obtained by the method is below 1 μm, and is specifically 0.01-0.1 μm so extremely fine with uniform powder particle diameter distribution. The primary particles of ~~which~~ the powder exist as independent bodies or as a soft aggregate type, and are in completely burnt ceramic phase so that the weight does not decrease even by additional thermal treatment.

~~And~~ Because the powder has excellent surface reactivity, so that molding is feasible even only with a thermal treatment at low temperature, the degree of freedom for a vibration plate is high and diverse methods of printing and coating can be applied.

But it may additionally comprise~~s~~ a step of conducting additional thermal treatment of the obtained ultrafine ceramic

oxide powder at 700-900°C to increase the crystallinity of the powder produced.

A method for forming a piezoelectric/electrostrictive film element at low temperature by an electrophoretic deposition process using ultrafine ceramic oxide powder will be explained. Figure 3 ~~shows~~ represents a method for forming a piezoelectric/electrostrictive film element at low temperature by an electrophoretic deposition process.

As for the ceramic oxide powder, the ultrafine ceramic oxide powder obtained by the method is used because it is effective to use fine powder to secure a system feasible of forming at low temperature, considering the powder reactivity itself.

The ultrafine ceramic oxide powder produced has small ceramic particle size with uniform size distribution and no voids, so that it can ~~get~~ achieve ideal stacking result with maximum bonding strength between particles.

~~Whence~~ It is preferable to use PZT, PMN or their solid solution (PZT-PMN) complex oxides ~~as~~ for the ultrafine ceramic oxide powder.

~~And~~ The ultrafine ceramic oxide powder may additionally comprise~~s~~ one or more components among nickel (Ni), lanthanum (La), barium (Ba), zinc (Zn), lithium (Li), cobalt (Co), cadmium (Cd), cerium (Ce), chromium (Cr), antimony (Sb), iron (Fe), yttrium (Y), tantalum (Ta), tungsten (W), strontium (Sr), calcium (Ca), bismuth (Bi), tin (Sn) and manganese (Mn).

Because interparticle vacancy exists no matter how closely it approaches an ideal stacking state, in order to improve the density

problem occurring according to the interparticle vacancy, there are separately prepared: a suspension or a dispersion liquid ~~dispersed of~~ comprising the ultrafine ceramic oxide powder in an organic dispersant, and a ceramic sol solution having the same or similar composition with the ultrafine ceramic oxide powder.

The ultrafine ceramic oxide powder which is used is dispersed in an organic dispersant, ~~as~~ for which ~~is~~ are mainly used alcohols such as ethanol and methoxy ethanol, and acetones such as acetone and acetyl acetone.

It is preferable that the content of the organic dispersant is 1-500 ml per gram of the ultrafine ceramic oxide powder. ~~It~~ This is used, because adequate dispersion does not arise if the content of the organic dispersant is lower than 1 ml per gram of the ultrafine ceramic oxide powder, while if the content is higher than 500 ml per gram of the ultrafine ceramic oxide powder, ~~then~~ the oxide powder is diluted to be of an exceedingly low viscosity.

The ceramic sol solution is made based on water or organic solvent which can be used from among a variety of organic solvents but is preferable to be mainly acetic acid, dimethyl formamide, methoxyethanol, alcohols, glycols ~~etc~~.

Then the ceramic sol solution and the suspension of the ultrafine ceramic oxide powder which are prepared separately are mixed. ~~The~~ A preferred mixing ratio of the ultrafine ceramic oxide powder and the ceramic sol solution ~~may be preferable if~~ is that the ~~content of the~~ ceramic sol solution is 1-500 parts by weight based on the weight of the ultrafine ceramic oxide powder when the powder and the suspension are mixed.

Thus if the ultrafine ceramic oxide powder and the ceramic